

REMARKS

Claims 17-33 and 36-38 are pending in the application. The Examiner has rejected all of the claims and did not enter the Supplemental Declaration submitted on August 17, 2006. Applicant respectfully seeks favorable reconsideration of rejected claims 17-33 and 36-38 in view of the following remarks and Supplemental Declaration.

In the Advisory Action mailed August 31, 2006, the Examiner indicated that the rejections to claims 20-23 under 35 USC § 112, second paragraph have been overcome. Applicant acknowledges with appreciation the withdrawal of the rejections to claims 20-23. The Examiner also did not enter the Supplemental Declaration indicating that “applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented.” *Advisory Action* (PTOL-303), n. 8. Applicant has filed a Request for Continued Examination under 37 CFR § 1.114, together with this submission under § 1.114(c), to “withdraw the finality of...[the April 17, 2006] Office action...[so that this] submission will be entered and considered.” § 1.114(d). The Supplemental Declaration is included in this Submission.

Applicant respectfully submits that the enclosed Supplemental Declaration establishes diligence toward the constructive reduction to practice of the invention during the period of December 17, 1999 to June 30, 2000 in accordance with M.P.E.P. § 2138.06 (citing *Bey v. Kollonitsch*, 866 F.2d 1024, 231 USPQ 967 (Fed. Cir. 1986)). Accordingly, the enclosed Supplemental Declaration together with the Declaration submitted on January 27, 2006 establish Applicant’s date of invention prior to December 17, 1999, the effective date of Ryan et al., and diligence during the above-mentioned time period. Thus, Applicant respectfully requests withdrawal of the rejection of claims 17-33 and 36-38 as being anticipated by U.S. Patent No. 6,429,139 B1 (“Ryan et al.”) or obvious in view of Ryan et al. combined with U.S. Patent No. 4,226,205 (“Nishida et al.”).

Assuming *arguendo*, even if Ryan et al. is determined to be prior art, claims 17-33 and 36-38 would be neither anticipated nor rendered obvious by Ryan et al., either alone or in combination with Nishida et al. The Examiner rejected claims 17-19, 24-26, 30 and 36-38 under 35 U.S.C. § 102(e) as being anticipated by Ryan et al. Applicant respectfully traverses the

rejections. Independent claim 17 claims *inter alia* “forming the load lock chamber...by an article supporting surface that is sealed to the inside of the wall around the opening[,]...removing the cover from its seal...while the article supporting surface remains sealed to the wall...[and] providing an opening between the load lock chamber and the process chamber by moving the article supporting surface away from the wall while the cover is sealed with the outside of the wall around the opening.” The Examiner asserted that Ryan et al. “teaches...using the load lock chamber in the claimed manner.” *Office Action*, p. 3 (citing Col. 2, Ln 42 to Col. 3, Ln 17). The Examiner further asserted that the limitations of “moving the substrates simultaneously in a manner in which the wafers are brought closer together then rotated 180 degrees is taught...[and] [a]ll other limitations are taught within these cited paragraphs or are taught in the claims.” *Office Action*, p. 3 (citing Col. 11, Ln 29-45).

In contrast to the Examiner’s assertion, Ryan et al. disclose a load lock chamber having “a plurality of pins 256...to position the wafer W vertically into a wafer transfer plane 260.” Col. 8, Ln 56-59. Ryan et al. fail to disclose or even suggest forming a load lock by “an article supporting surface that is *sealed to the inside of the wall around the opening*...[and] removing the cover from its seal...*while the article supporting surface remains sealed to the wall*” as claimed in independent claim 17. (emphasis added). In addition, Ryan et al. disclose that “the load lock chamber 2-6...[has] a load lock cover 250...which [is]...lowered within a shallow T-shaped recess 252 and sealingly engages and thereby *isolates* a portion of the load lock chamber 250...from the transfer chamber 205.” Col. 8, Ln 38-45; (emphasis added). Ryan et al. further disclose that “the load lock cover 250 is lifted or otherwise moved out of the recess 252...to bring the recess portion 252 of the load lock chamber 206 into fluid communication with the transfer chamber 204.” Col. 8 Ln 45-50. Thus, Ryan et al. teach away from “providing an opening between the load lock chamber and the process chamber by moving the article supporting surface away from the wall while the cover is sealed with the outside of the wall around the opening” as claimed in independent claim 17. Indeed, Ryan et al. simply fail to disclose each and every element claimed in independent claim 17. Accordingly, Applicant respectfully submits that independent claim 17 is not anticipated by Ryan et al. and requests withdrawal of the rejection to independent claim 17.

Dependent claims 18-19 and 24-25 depend either directly or indirectly from independent claim 17 and thus are similarly not anticipated by Ryan et al. for at least the reasons set forth

above. In addition, dependent claim 19 claims “wherein swapping of the...articles includes moving said articles toward each other, then rotating the articles...and thereafter moving said articles away from each other.” Ryan et al. disclose a transfer arm 454 within “a system 450 employing a generally elliptical...housing 452...as illustrated in Figs. 9a-9d.” Col. 11, Ln 15-20. The transfer “arm 454 contains end effectors 456...that rotate about an end axis 458 in a controlled manner (i.e., *as a function of the rotational position of the arm 454 about the center axis 412*.)” Col. 11, Ln 22-24, 29-34; Figs 9a-9d; (emphasis added). Thus, as shown in Figs 9a-9d, when the transfer arm 454 begins to rotate from its position in Fig. 9a, the end effectors 456 gradually rotate the wafers W through the positions shown in Figs 9b-9d so that “the end effectors 456 (and therefore the wafers W) travel between the chambers 402 and 406 in a generally elliptical transfer path.” Col. 11, Ln 44-46; Figs 9a-9d. Ryan et al. fail to disclose or even suggest “moving said articles toward each other, then rotating the articles ...and thereafter moving said articles away from each other” as claimed in dependent claim 19.

Ryan et al. also fail to disclose each and every element of dependent claim 24. Dependent claim 24 claims “moving the article supporting surface with articles thereon laterally between the load lock chamber and the processing chamber.” Ryan et al. disclose rotational movement of the transfer arm 454 and the end effectors 456 and fail to disclose or even suggest “moving the article supporting surface...*laterally between*” the chambers as claimed in claim 24. (emphasis added). Indeed, it appears that the construction of the transfer arm apparatus 454 of Ryan et al. (*see* Figs 9a-9d) would be incapable of laterally moving the wafers W between the chambers as claimed in claim 24. Accordingly, for these further reasons Applicant respectfully submits that dependent claims 19 and 24 are not anticipated by Ryan et al. and requests withdrawal of the rejections to dependent claims 18-19 and 24-25.

Independent claim 26 is also not anticipated by Ryan et al. Independent claim 26 claims “moving...one article in the processing chamber and...one article in the load lock chamber towards each other, thereafter...rotating the articles..., and thereafter, moving the articles away from each other.” Nowhere do Ryan et al. disclose or even suggest such a method as claimed in claim 26. As discussed above with respect to dependent claim 19, Ryan et al. disclose a transfer arm 454 within “a system 450 employing a generally elliptical...housing 452...as illustrated in Figs. 9a-9d.” Col. 11, Ln 15-20. The transfer “arm 454 contains end effectors 456...that rotate about an end axis 458 in a controlled manner (i.e., *as a function of the rotational position of the*

arm 454 about the center axis 412).” Col. 11, Ln 22-24, 29-34; Figs 9a-9d; (emphasis added). Thus, as shown in Figs 9a-9d, when the transfer arm 454 begins to rotate from its position in Fig. 9a, the end effectors 456 gradually rotate the wafers W through the positions shown in Figs 9b-9d so that “the end effectors 456 (and therefore the wafers W) travel between the chambers 402 and 406 in a generally elliptical transfer path.” Col. 11, Ln 44-46; Figs 9a-9d. Ryan et al. fail to disclose or even suggest moving an article in the process chamber and an article in the load lock chamber “towards each other, thereafter...rotating the articles..., and thereafter, moving the articles away from each other” as claimed in independent claim 26. Accordingly, Applicant respectfully submits that independent claim 26 is not anticipated by Ryan et al. and requests withdrawal of the rejection to claim 26.

Ryan et al. also fail to disclose each and every element claimed in independent claim 30. Independent claim 30 claims “during a first time interval...[,] removing a previously processed first batch of one or more articles from the load lock...and loading a second batch...into the load lock, while a third batch...is being processed in the vacuum chamber, during a second time interval, closing the load lock..., reducing the pressure within the load lock..., and opening the load lock...to the vacuum chamber, while the third batch...is being processed..., during a fourth time interval, closing the load lock...from the vacuum chamber and then venting the load lock...to the outside, while the second batch...is being processed in the vacuum chamber, and during a fifth time interval, opening the load lock...[,] removing the third batch...from the load lock...and loading a fourth batch...into the load lock, while the second batch...is being processed in the vacuum chamber.” Ryan et al. simply fail to disclose each and every step of the five time intervals claimed independent claim 30. Ryan et al. disclose that systems 400, 450 “may be utilized in accordance with a method of serially transferring wafers to and from a process chamber.” Col. 12, Ln 52-54; Fig. 12. However, the method disclosed by Ryan et al., as shown in Fig. 12, indicates that Ryan et al. contemplated a method specific to the apparatus disclosed in Ryan et al., and not the method as claimed in claim 30. Indeed, Ryan et al. fail to disclose “removing a previously processed...batch of...articles...from the load lock chamber to the *outside*” and loading and removing articles from the load lock chamber “*while* the...batch of one or more articles is being processed in the vacuum chamber” as claimed in claim 30. Accordingly, Ryan et al. fail to disclose each and every element claimed in independent claim

30. Thus, Applicant respectfully submits that claim 30 is not anticipated by Ryan et al. and request withdrawal of the rejection to claim 30.

Independent claim 36 is also not anticipated by Ryan et al. Independent claim 36 claims “connecting one end of a transfer arm to at least one article in the processing chamber and another end of the transfer arm to at least one article in the load lock chamber.” In contrast, Ryan et al. disclose “a plurality of pins 256 operated by a pin assembly 258 to position the wafer W vertically into a wafer transfer plane.” Col. 8, Ln 57-59. “The transfer arm...includes an elongate transfer member...having generally U-shaped end effectors 418 at each...end.” Col. 10, Ln 31-33. It appears that the wafers simply rest on the U-shaped end effectors and are not “connected” to the transfer arm as claimed in claim 36. Accordingly, Ryan et al. fails to anticipate independent claim 36 and Applicant respectfully requests withdrawal of the rejection.

Ryan et al. also fail to disclose each and every element claimed in independent claim 37. Independent claim 37 claims “moving articles from...the load lock...or...processing chamber to a separate exchange location within the vacuum chamber, thereafter moving articles from the other of the load lock...or the processing chamber to said one of the load lock...or the processing chamber, and thereafter moving articles from the exchange location to said other of the load lock...or the processing chamber.” Ryan et al. disclose “a neutral position...wherein the transfer arm 412 resides within the transfer chamber 404 entirely...[and] the internal access ports for the load lock chamber 406 and the process chamber 402 typically are closed.” Col. 10, Ln 52-62. Ryan et al. fail to disclose or even suggest “moving articles...to a separate exchange location *within the vacuum chamber*” as claimed in claim 37. (emphasis added). In addition, the neutral position of Ryan et al. is not an *exchange* location as claimed in claim 37. The neutral position simply permits the transfer arm to reside in a neutral position sealed from both the process chamber and the load lock chamber. Accordingly, independent claim 37 is not anticipated by Ryan et al. and Applicant respectfully requests withdrawal of the rejection to claim 37.

Independent claim 38 claims “providing a carriage that is horizontally movable between the vacuum processing and load lock chambers..., positioning said...article on the carriage..., and thereafter moving the carriage with said...article.” In contrast, Ryan et al. disclose a “transfer arm” (See elements 414 and 454 in Figs. 8a-9d) and fail to disclose or even suggest a “carriage” as claimed in independent claim 38. Indeed, Ryan et al. disclose a transfer arm 414, 454 that rotates about an axis 412 and fail to disclose horizontal movement of the transfer arm

and certainly fail to disclose “providing a carriage that is horizontally movable” as claimed in independent 38. Accordingly, claim 38 is not anticipated by Ryan et al. and Applicant respectfully requests withdrawal of the rejection.

The Examiner rejected claims 20-23, 27-29 and 31-33 under 35 U.S.C. § 103(a) as being obvious in view of Ryan et al. combined with Nishida et al. Applicant respectfully traverses the rejections. The Examiner conceded that Ryan et al. fail to teach “using a carrier dome[,]” but asserted that “Nishida teaches that using a carrier dome allows for coating multiple wafers...[and] [t]herefore, it would have been obvious...to use a carrier dome in the process taught by Ryan...[so that] multiple wafers may be coated simultaneously.” *Office Action*, p. 4. Notably, dependent claims 20-23 depend indirectly from independent claim 17 (discussed above). Thus, Applicant respectfully submits that even if Ryan et al. were combined with Nishida et al., the combination would not achieve the invention as claimed in dependent claims 20-23 for at least the reasons set forth above with respect to independent claim 17. In addition, dependent claims 27-29 depend from independent claim 26 (discussed above). Thus, even if Ryan et al. were combined with Nishida et al., the combination would not achieve the invention as claimed in dependent claims 27-29 for at least the reasons set forth above with respect to independent claim 26. Moreover, dependent claims 31-32 depend from independent claim 30 (discussed above). Thus, even if Ryan et al. were combined with Nishida et al., the combination would not achieve the invention as claimed in dependent claims 31-32 for at least the reasons set forth above with respect to independent claim 30.

As mentioned above, the Examiner also rejected independent claim 33 which claims “positioning the plurality of wafers across a plurality of wedge shaped pieces that are fit together on a first frame to form a dome surface, [and] moving one of the wedge shaped pieces at a time...until all of said...pieces are moved from the first frame to the second frame.” Similarly, dependent claims 21-23, 28-29 and 32 all claim “wedge shaped pieces” of a dome. In contrast, Nishida et al. teach an apparatus having a “dome 50...situated to be transferred” wherein “the dome 50 is transferred from the lower section 64...to the upper section 28.” Col. 3, Ln 25-26; Col. 4, Ln 26-29; Figs 2, 4-5. Nishida et al. also teaches a method including a “dome loading step” wherein an operator places “a first dome 50 on the pedestal” and a “first layer depositing step” wherein “the dome 50 is rotated about its pole.” Col. 6, Ln 6-25, 44-58. Thus, the teachings of Nishida et al. imply a dome comprised of a single piece for carrying wafers, but fail

to teach a dome having "wedge shaped portions" or "pieces" as claimed in claims 21-23, 28-29 and 32. Accordingly, for these further reasons Applicant respectfully submits that even if Ryan et al. and Nishida et al. could be combined, the combination would not achieve the invention as claimed in independent claim 33 and dependent claims 21-23, 28-29 and 32.

In view of the foregoing remarks, Applicant respectfully submits that the enclosed Supplemental Declaration establishes diligence toward the constructive reduction to practice of the invention during the period of December 17, 1999 to June 30, 2000 and thus, the Supplemental Declaration together with the Declaration submitted on January 27, 2006 antedate Ryan et al. In the alternative, even if Ryan et al. is found to be prior art, independent claims 17, 36, 30, 33 and 36-88 and dependent claims 18-23, 27-29 and 31-33 neither anticipated nor rendered obvious by either Ryan et al. either alone or in combination with Nishida et al. Accordingly, Applicant respectfully requests withdrawal of the rejections and that the application be promptly passed to issue.

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